

10/665,726

- 9 -

Amendments to the Drawings

In FIG. 1, the "Local App" reference number is changed from 20 to 38.

Attachment: Replacement Sheet

Annotated Marked-Up Drawings for FIG. 1

10/665,726

**RECEIVED
CENTRAL FAX CENTER****FEB 28 2007**

- 10 -

REMARKS

This Amendment is being filed in response to the Office Action mailed from the U.S. Patent and Trademark Office on August 29, 2006 in the above-identified application. Reconsideration and further examination are requested.

Claims 1-21 are pending in the application. Claims 1-4 and 6-21 have been rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,789,116 to Sarkissian et al. ("Sarkissian"). Claim 5 has been rejected under 35 U.S.C. 103 as being obvious over Sarkissian in view of U.S. Patent Application no. 2002/0052749A1 to Bauer ("Bauer").

Claims 1-21 have been amended for clarification purposes and do not introduce any new matter.

Objection to Drawings

As an initial matter, the drawings were objected to as various reference characters were either duplicative or not included in the drawings despite being mentioned in the detailed description.

Specifically, the Examiner noted that reference character "20" had been used to designate both "Local APP" and "JPU22" in FIG. 1. FIG. 1 has been amended to label Local App with reference character "38", and similarly the Specification has been amended consistently. A marked up copy of the original drawings and formal replacement drawing for FIG. 1 is now enclosed.

The Examiner has also objected to the drawings failure to include "load balancing function 11" as described on Page 12, line 4 of the Specification. The "load balancing function" had been previously assigned reference character "16" in the drawings, and the Specification has been amended accordingly.

With entry of the foregoing amendment to the specification and drawings, Applicants respectfully believe that the drawings comply with the applicable rules under 37 CFR 1.84.

10/665,726

- 11 -

Informalities

The Examiner objected to the Specification based on references to attorney docket numbers. Applicants have amend the Specification to refer to application numbers, including the status of the related applications listed on pages 1, 14, and 16 of the Specification.

Rejections under 35 U.S.C. Sec. 112

On Page 3 of the Office Action, the Examiner rejected claims 1 through 20 under 35 U.S.C. Sec. 112, second paragraph as being indefinite. Applicants have made the following amendments in response to the Examiner's rejection.

In Claim 1, the terms "the field" and "the field oriented data" have been amended to clarify the terms recited as "field delineated data".

Claims 2 through 19 have been amended to substitute the terms "An Apparatus" with "A processor" as used in Claim 1.

Claims 8, 10, 11, 13, and 16 have been amended to substitute the term "logic circuit" with the term "logic unit" as used in Claim 1. Further, Claims 11, 16, and 18 have been amended to use the indefinite term "an" in connection with the term "external central processing unit."

Claim 19 has been amended to remove the phrase "selected from the group consisting of floating point, integer, and other numeric fields." In one embodiment of the present invention, as recited in Claim 19, the logic unit handles numeric data sign operations. One skilled in the art would recognize that numeric data sign operations may include mathematical operations involving, for example, floating point, integer, fixed point, or other numerical representations.

Applicants believe these amendments address the Section 112 concerns raised by the Examiner.

Rejections under 35 U.S.C. Sec 102(b) and 103

Claims 1-4 and 6-21 have been rejected under 35 U.S.C. 102(b) as being anticipated by Sarkissian. Claims 5 has been rejected under 35 U.S.C. 103 as being obvious over Sarkissian in

10/665,726

- 12 -

view of Bauer. Claims 1 and 21 are independent claims upon which all others depend. Claim 1 recites:

1. A programmable pipeline processor for processing streaming input data, comprising:
 - an interface, for receiving field-delineated data from a field parser, the field parser connected to parse non-field delineated data from a streaming data source into the field-delineated data, under instructions from an external processing unit;
 - a field buffer that stores the field delineated data; and
 - at least one logic unit that performs at least one field operation on the field delineated data.

Claim 21 is an analogous method claim.

Without limitation, embodiments of the present invention relate to a Programmable Streaming Data Processor (PSDP) which is arranged to perform primitive functions directly on data received from a streaming data interface. The PSDP processes data from a streaming data source, such as a disk drive, prior to its being forwarded to a central processing unit (CPU) of a more general processor. The PSDP performs certain preliminary processing in order to reduce the computational load on the local CPU. Within the PSDP, a data engine determines field boundaries in the data received from a streaming interface FIFO, selects one or more fields to be output tuples, and contains logic to determine whether an output tuple is to be selected for further processing by additional Job Processing Units.

As recited in independent claim 1, a field oriented pipeline processor for a data engine has an interface for receiving field-delineated data from a field parser. The field parser parses non-field delineated data from a streaming data source into field delineated data under instruction from an external processing unit. The pipeline processor receives a field delineated data stream and employs logical arithmetic methods to compare fields with one another, or with values otherwise supplied by general purpose processors to precisely determine which records are worth transferring to memory of the more general purpose distributed processors. The architecture allows for the use of substitution tables, temporary registers, and a data string register to assist in the efficiency and accuracy of the data engine processing.

10/665,726

- 13 -

Sarkissian describes a network packet monitor that may be employed on packets "passing through the connection point on a computer network." Sarkissian, Col. 3, lines 30-33. The packet monitor of Sarkissian "may be used to analyze traffic in a network." Sarkissian, Col 25 lines 24-25. The monitor comprises a parser sub-system that determines flow signatures and an analyzer sub-system that analyzes the flow signature of each packet. Sarkissian, Col 25 lines 24-25. In contrast to merely analyzing and routing packet flows in a network, the present invention actually provides based processing on the field delineated data received.

With respect to claim 1, the Examiner cited the parser interface 1101 of Fig. 11 in Sarkissian as the "interface, for receiving field-delineated data from a field parser." The "parser" of Sarkissian "examines the packets using pattern recognition process 204 that parses the packet and determines the protocol types and associated headers for each protocol layer that exists in the packet 302. Sarkissian, Col. 8, lines 64-67. In contrast, the data referred to in the present invention relates primarily to field-oriented database records, including field delineated data such as tables, indices, and views. For example, the system of the present invention can also be advantageously used to process less structured data, such as, variable length character strings, Binary Large Objects (BLOBS), graphics files, and the like. Specification, Page 18, lines 5-14. The identification of protocol types and headers as performed in Sarkissian is much different the field-delineated data as described in connection with the present invention. This difference is of particular significance with regards to the "logic unit that performs at least one field operation on the field delineated data."

The analyzer sub-system 303 of Sarkissian cited by the Examiner does not "*perform at least one field operation on the field delineated data.*" As described above, the streaming data received at the parser of the present invention determines field boundaries in data and performs low level logical operations to reduce computational load on a general processor. The processor of the present invention employs logical arithmetic methods to compare fields with one another, or with values otherwise supplied by general purpose processors to precisely determine which records are worth transferring to memory of the more general purpose distributed processors. The architecture allows for the use of substitution tables, temporary registers, and a data string register to assist in the efficiency and accuracy of the data engine processing. In contrast, the analyzer of Sarkissian does not actually perform a field operation on field delineated data. The

10/665,726

RECEIVED
CENTRAL FAX CENTER

FEB 28 2007

- 14 -

analyzer is simply a classification mechanism for analyzing fields in the record and switching packet flows from a network. Therefore, because neither Sarkissian nor Bauer, taken alone or in combination, teaches, suggests or makes obvious the field operation on the field delineated data of the Claims 1 or 21, Applicant respectfully submits that Claims 1 and 21 are in condition for allowance. Further, Applicant respectfully submits that Claims 2-20 are also in condition for allowance as dependent on an allowable base claim.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 

F. James Coe

Registration No. 46630

Telephone: (978) 341-0036

Facsimile: (978) 341-0136

Concord, MA 01742-9133

Date: February 28, 2007

Title: FIELD ORIENTED PIPELINE...
Inventors: Foster D. Hinshaw, *et al.*
Annotated Sheet

1/6

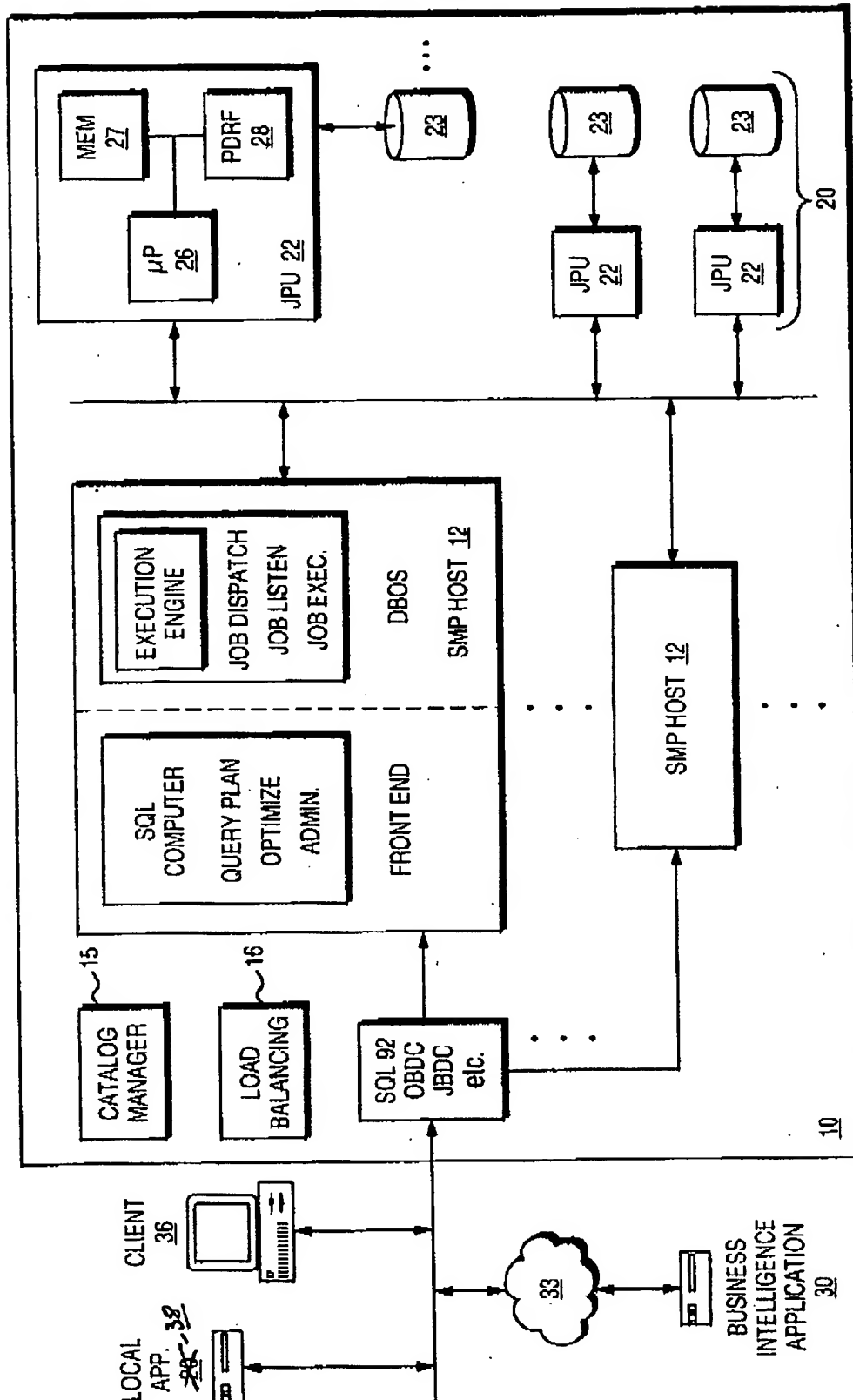


FIG. 1